

it may the fuller meet the requirements of the classes for which it is intended. It is desirable, for instance, if not indeed essential, that the mean temperature be given to tenths of a degree and not merely to whole degrees, particularly when it is kept in view that no inconsiderable portion of Great Britain is but little removed from the limits of the successful cultivation of the wheat, and the rainfall to hundredths of an inch, so as to mark off clearly the practically rainless districts during each week. The number of stations situated on the coast preponderates too largely. Additional stations from several of the great agricultural centres are needed, and a partition of the country into more districts than ten, it being evident that a division of Scotland merely into east and west, and of Ireland into north and south, is inadequate. Scotland, for instance, should be divided at least into north-east, north-west, south-east, and south-west divisions, these differing essentially from each other in their climatic and agricultural peculiarities.

MISSOURI WEATHER REPORTS, NOS. 1, 2, AND 3.—The system of weather service for the State of Missouri is being satisfactorily and energetically developed by Prof. Francis E. Nipher, Washington University, St. Louis. The second report, being for January last, is accompanied with a table showing the rainfall at thirty-eight stations in Missouri and a map on which the amounts are entered and isohyetal lines drawn showing where the fall was nothing, one inch, two inches, and three inches respectively. From this map the distribution of the rainfall, a correct knowledge of which is so important to farmers and others, is seen at a glance. The distribution of the heavy snowfall of the 30th and 31st is particularly detailed, and we are pleased to see the frankness with which Prof. Nipher informs his observers that it has been impossible to give a proper account of the remarkable storm of the 26th, which entered the northern part of the state at 8 A.M. and soon thereafter developed into a severe thunderstorm in central and southern Missouri, owing to the times of the beginning and ending of the storm not being given carefully for a sufficient number of places. We feel assured that the observers will gladly see to the rectification of this and supply the information desiderated in future. From the first report we see that the mean temperature of December was  $12^{\circ}4$  above the average of the month; and with this high temperature, the mean of the month being  $45^{\circ}6$ , vegetable and animal life was prematurely urged forward at an undesirably rapid rate. A valuable table accompanies this number, which has been prepared by Dr. Engelmann, giving the mean monthly temperatures and extremes and the mean rainfall at St. Louis for forty-two years, from which it appears that the mean of the coldest month, January, is  $31^{\circ}7$ ; the warmest month, July,  $79^{\circ}2$ , and of the year,  $55^{\circ}4$ . The highest temperature noted during these forty-two years was  $104^{\circ}0$  in July, 1860, and the lowest— $23^{\circ}0$  (below zero) in January, 1873. The mean annual rainfall is  $42^{\circ}46$  inches, the largest monthly fall being  $5^{\circ}39$  inches in June, and the least,  $2^{\circ}13$  inches in January.

EXTRAORDINARY RAIN-STORM IN CANADA.—A continuous storm of rain, extending over two or three days, and covering a considerable portion of North America, occurred in the end of February, the weather for some time before having been unusually mild. Near the coast rain prevailed, in the Quebec district much snow fell, about Ottawa, sleet, hail, rain, and snow fell in succession, and on advancing westwards through Canada, and into the United States, the precipitation appears to have been heavier. In Central Canada the floods seem to have been most destructive, and immense damage has been done to the towns built on the rivers, by the loosening of the ice by the floods, which, floating down the swollen rivers, carried bridges and other structures before it. Much damage was also done by the ice running aground

at various points, and thereby damming up the rivers, by which extensive stretches of low-lying grounds were submerged.

COMPARATIVE ATMOSPHERIC PRESSURE OF NEW ZEALAND AND GREAT BRITAIN.—Mr. C. Rous Marten, whose name has been so long and so favourably associated with the meteorology of New Zealand, has published a short paper on this subject in the *Transactions* of the Wellington Philosophical Society. The mean pressure of the atmosphere of Great Britain calculated from fourteen stations distributed from the Channel to the Moray Frith, is  $29^{\circ}848$  inches; and of New Zealand, as similarly determined from fourteen stations from Southland to Mongonui,  $29^{\circ}918$  inches. The interest of the comparison lies in this, that pressure diminishes in both countries at a somewhat rapid rate on proceeding into higher latitudes, and that though the New Zealand stations lie on the average in about  $12^{\circ}$  lower latitudes than British stations, yet the pressure does not greatly differ in the two countries. The strong resemblances between the climatologies of the two countries result from the peculiar distribution of pressure common to both and the lie of their mountain ranges, by which the prevailing winds are westerly, and being laden with the vapour of the ocean they have traversed, are productive of rainy climates in the west, and dry climates in the east.

## NOTES

INVITATIONS have recently been issued by the Rector of the University of Pavia to the various scientific societies of Europe, to participate in the ceremonies connected with the unveiling of the statue of Volta on April 28.

THE Electro-metallurgical Company of Brussels has lately completed a colossal statue of Jan van Eyck, in bronze, by the system of electric deposition. The galvanic process occupied several months, although a thickness of but six to eight millimetres was attained. It is probably the largest object which has been produced by this method, being over twelve feet in height, and is regarded as a much more perfect imitation of the model than could be obtained by casting.

THE meeting of the delegates of the French Sociétés Savantes will take place as usual at the Sorbonne, in the first week after Easter. M. Bardoux will preside over the meeting for the distribution of prizes, and deliver an address summarising all the measures contemplated by the Government for promoting popular instruction.

M. BARDOUX has given the decoration of the Legion of Honour to the oldest schoolmaster of France, who has been teaching since 1818 in the very parish where he was born. The ceremony took place at Clermont-Ferrand at a dinner given by the Prefect in honour of the Minister. The whole scene is said to have been very impressive.

M. ASSELINE, a journalist and a member of the Municipal Council of Paris, died suddenly a week ago. He was one of the Society of Mutual Autopsy recently established in Paris for investigating by *post mortem* examination all the circumstances of death, and his case was the first instance of the application of the rules of the Society. The autopsy was made by Dr. Broca, the president of the Society, and the results published in the papers.

THE Municipal Council of Paris has appointed a Commission of ten members in order to take part in the proceedings of the French Association for the Advancement of Science, which will take place at Paris, as we have already reported. They will sit in their official capacity.

A SOCIÉTÉ DE MINÉRALOGIE has been formed in Paris, with M. Des Cloiseaux as president. It meets on the second Tuesday of each month in the mineralogical laboratory of the Sorbonne.

A *Cours Annexe* has been created at the Sorbonne for physical astronomy. M. Wolff will lecture on the observational methods of physical astronomy, and the constitution of celestial bodies.

M. OSSIAN BONNET, Director of Studies to the Polytechnic School, has been appointed successor to M. Leverrier in his capacity of Lecturer on Mathematical Astronomy.

THE Italian Cryptogamic Society, founded in 1858 by De Notaris, has just been reconstituted under the presidency of Prof. F. Ardissoni, of Milan. It consists of two classes of members: ordinary (*effettivi*) and foreign. The former consist entirely of Italian, the latter of foreign cryptogamic botanists, the foreign members being elected by the vote of the ordinary members. The Society will publish annual volumes of its "atti," and, in addition, one or more fasciculi every year, each containing fifty new or interesting species of cryptogams, at a cost of 10 lire (Italian) the fasciculus. The British corresponding members at present are the Rev. M. J. Berkeley, Dr. R. Braithwaite, Dr. M. C. Cooke, Mr. Jas. Stirton, and Mr. John Smith. Cryptogamists who are not members of the Society are invited to contribute descriptions or specimens of new species, for which they will receive in exchange the volume or fasciculus containing their contributions.

THE Birmingham Natural History and Microscopical Society, one of the most active of our provincial societies, have resolved to spend about 100*l.* in improving and adding to their apparatus.

THE Faculty of Medicine at Lyons has taken the initiative in a subscription for the erection of a monument to the late Claude Bernard on the Quai de la Vitriolerie.

DR PULJ, of Vienna, exhibited at a recent session of the Imperial Academy, an ingenious arrangement for signalling by means of the telephone. The vibrating membranes in two connected telephones are replaced by a pair of tuning-forks giving the same number of vibrations per second. A bell is placed close to each fork and a brass ball is suspended from a thread between the two, but in contact with the fork. If one of the forks be put in vibration by means of a hammer the movement is communicated to the other, which causes a loud ringing on the bell by means of the ball. A response can be sent back in the same manner, and after replacing the vibrating membranes, the usual method of communication begins.

A FRENCH inventor, M. Brégnét, has recently completed a so-called mercury telephone, which is quite a variation on the systems already in use. It is composed of two instruments for transmission and reception, connected by means of wires. Each of these consists of a glass vessel, containing acidulated water and mercury, into which is inserted a capillary tube filled with mercury. One wire connects the mercury in the tubes, and the other that in the vessels. When a person speaks before the transmitter, the vibrations of the air are communicated to the mercury, and cause variations in the electromotive force, which are transmitted to the receiver, and there give rise to vibrations of the air appreciable by the ear. A later simplification of the apparatus consists in using a tube with alternate drops of mercury and acidulated water, forming thus a series of electro-capillary elements.

WE are glad to know that one of the signs of our times is a more appreciative and intelligent interest in the things lying around us, including the beauties of nature as well as those affairs of a more human interest. Messrs. Marcus Ward and Co., in their new monthly publication, entitled, *Our Native Land*, a copy of which we have just received, certainly deserve well of those who think that the habit of observation can be fostered and developed by calling attention to the many things of beauty and

interest in our own country. The work is to consist of reproductions of water-colour sketches, with descriptive notes, and the publication breaks ground by giving coloured plates and text illustrating "Derwentwater," "Ambleside," and "Rydal Falls." The publication is as excellent in execution as it is admirable in idea, and the reproduction of the water-colour of Ambleside is admirable; it is one of the finest specimens of chromolithography that we have ever seen. Its truth to the colour of nature and the softness of the atmospheric effects, leaves little, if anything, to be desired.

MACMILLAN AND CO. are preparing for publication a "Journal of a Tour in Morocco in 1871, including a Visit to the Great Atlas," by Sir J. D. Hooker, P.R.S., &c., and John Ball, F.R.S., with a Sketch of the Geology of Morocco, by George Maw, F.G.S. The work will be illustrated by Mr. Whymper.

GEN. DE NANSOUTY, the director of the Pic du Midi Observatory, has been appointed Officer of Public Instruction as a reward for his efforts and successes. He had already been made, eighteen months ago, Officer of the Academy. The General Council of Vauchuse framed, at its last session, a resolution for establishing a meteorological observatory on the top of Mount Ventoux, a mountain about 2,000 metres high, situated in the most admirable position for an extensive view of an immense region.

THE intellectual abilities of the Japanese race have been evidenced in a striking manner by a quartette of students from that country now studying in Berlin. One of these, Dr. Dirokitaio, has lately invented an ingenious optical instrument termed the leucoscope, which measures the variations in the perception of light and colour by the human eye, in accordance with the strictest mathematical laws. Another, who has attained the rank of lieutenant in the Prussian army, has introduced a remarkable simplification into the mechanism of the Mauser rifle, which has succeeded the historic needle-gun. Two more who are prosecuting their chemical studies under Prof. Hofmann, have published for two years past several interesting synthetical researches on the aromatic series.

THE canvas for the great Paris captive balloon is quite ready; it forms 46 rolls, weighing 60 kilogs. each, having a length of 80 metres, and a breadth of 113 centimetres. It was submitted to a traction of 1,000 kilogs., under which it has extended 25 millimetres per metre. After some time the increase in length was reduced to 12½ millimetres. The net is almost finished. It is composed of 256 ropes 11 millimetres each in diameter, and bearing a strain of 1 ton.

IN a note in the *Bulletin* of the French Scientific Association, Col. Gazan gives some interesting observations on the fracture of iron. During his sojourn in the arm manufactories of St. Etienne and Tulle, at the central dépôt of artillery, and at the manufactory of Châtellerault, he was able to make important researches on iron. The fracture of iron may be nervous, in grains more or less fine, or in facets sometimes having a surface of several square millimetres; often it presents a mixture of these three features. Thus it is impossible to judge of the quality of an iron before breaking it; and it is on this account that in arm manufactories they break a certain number of bars with which they make a certain number of pieces for which they are intended, and which are afterward broken to ascertain their resistance, that is, the goodness of the iron, which, moreover, is still rendered brittle in presence of phosphorus, arsenic, or sulphur. The best irons are the nervous, then those of fine grain and with facets. On railways it has been proved that rails placed in the direction of the magnetic meridian are affected quite differently from rails placed at right angles to this direc-



tion; the former oxidise and do not become brittle, the latter do not oxidise, but do become brittle. In intermediate directions the rails participate more or less in the qualities of those which are placed in the two extreme directions. What becomes of the iron which is now so plentifully used in the construction of building—girders among others? Is not this a subject for serious research?

THE French Minister for Public Works has accepted the plans of an underground railway in Paris, which was worked out by order of the Prefect of the Seine. According to these it is intended to build the central station seven metres underneath the gardens of the Palais Royal. Three different lines will radiate from that spot, viz.: (1) to the Exchange, the Opera, the railway station of St. Lazare, then to Batignolles, communicating with the Great Western Railway and the Chemin de Fer de Ceinture; (2) to Les Halles, the rue Turbigo, the Boulevard Sebastopol, the Boulevard de Strasbourg, the Great Eastern and Great Northern Railways; from the Boulevard de Strasbourg a branch line would lead to the Vincennes and Lyons Railway Stations, passing underneath the Seine to the left bank of the river; (3) to the rue de Rennes, the Montparnasse Railway Station, the station for Sceaux, and to Gentilly. The cost of the lines is estimated at 6,000,000*l.*, and is to be borne jointly by the State, the Departement de la Seine, and the City of Paris.

WRITING in *La Nature*, M. Hélène calls attention to the excellent example set by Switzerland in regard to popular meteorology. There is hardly a town but has in one of its squares, perhaps at the side of a lake, an elegant column with instruments required for observation of the usual phenomena. Thus in Fribourg, is a black marble column (about 2·65 m. high) on a granite platform. On the north face is an alcohol thermometer, with double graduation cut in the marble; on the west a mercury barometer; on the east a hair hygrometer. The south face has an inscription giving the longitude, latitude, altitude, barometric and thermometric means, and annual rainfall. On a globe crowning the column are lines giving the direction of the four cardinal points. An inscription near the base tells that the column was erected by the Fribourg Society of Natural Sciences. The monument cost not more than 1,500 to 2,000 francs. Such columns often give various other kinds of information, e.g. the hour in different cities of the globe when it is mid-day at Berne, the heights of neighbouring mountains, measures, variations of lake level, records of severe winters, &c., in short the chief points which a natural curiosity would seek knowledge of. They are generally erected by cantonal societies.

WE have received the first two parts of the tenth edition of Cooley's "Cyclopædia of Practical Receipts," revised and partly rewritten by Prof. R. V. Tuson, F.C.S. To what extent the work has been brought up to date may be learned by looking at the articles on Spectrum Analysis and Anemometers; in the latter case the anemometers now in use are dismissed in a foot-note.

INTERESTING antiquities, coins, vases, &c., have recently been found at Strassburg in some excavations which are being made in connection with water-works. In some parts a number of skeletons of animals have been discovered, amongst others a well-preserved jaw with tusks of a prehistoric boar, and some deer horns, &c.

AT Cologne a meeting of the International Society against the pollution of rivers, the soil, and air, took place a few weeks ago. Its reports are published by Herr Hugo Voigt, at Leipzig.

THE International Congress for the investigation of the history of America before Columbus, will meet at Brussels during 1879. Originally it was intended to hold the meeting at some American city.

THE United States of North America possessed only forty-nine public libraries in the year 1800. The number has now risen to no less than 3,682, and the number of volumes contained in them exceeds thirteen millions.

TWO new institutions are about to be established in Germany; one at Bielefeld, for textile industries, and another at Iserlohn, for metal industry.

ON March 11 the Ural Mountains were first crossed by a railway train upon the occasion of the opening of the new line from Perm to Jekaterinburg.

ON the 14th inst. the Institution for the Deaf and Dumb at Leipzig celebrated the 100th anniversary of its foundation. It is the oldest institution of the kind in Germany.

A NEW eruption is reported to have occurred in Iceland on March 24, in the vicinity of Mount Hecla.

DURING the past three years Admiral Duperré has met with considerable success in his efforts to develop the resources of the French colony in Cochin China. He first started an experimental farm just outside Saigon, where sugar-cane, cotton, indigo, coffee shrubs, &c., were planted under the superintendence of a botanist from Paris. From this farm thousands of coffee plants, &c., are distributed every year all over the colony among the French and native planters. Tobacco has also been successfully cultivated, and attempts are about to be made to prepare the leaf for the European market, and an official from the tobacco manufactory at Paris has been appointed to superintend this work. The sugar-cane is found to flourish well in Cochin China, and experiments are being made with a view to discovering the best means of turning it to profitable account.

AT p. 16, vol. xvi. of *NATURE*, is an account of a new stimulant known as pituri, which it was shown had been proved by Baron von Mueller to be derived from *Duboisia hoptwoodii*, a plant described by himself in 1861. It was mentioned in the paper above alluded to that the better known species of *Duboisia*, namely, *D. myoporoides* of Robert Brown might possibly prove to be of some medicinal value. This prophecy has since been borne out, for in a paper read by Dr. J. Bancroft on *Duboisia* and Pituri before the Queensland Philosophical Society at Brisbane, a good deal of information is given on both these new medicinal products. With regard to *D. myoporoides*, which is a small tree or shrub, we are told that it is found in various localities from the neighbourhood of Sydney to that of Cape York, and that it has also been found in New Caledonia and New Guinea. It grows plentifully on the borders of the vine scrubs about Brisbane and springs up abundantly after the clearance of forest land. The valuable part of the plant seems to be the leaves, from which an extract was, in the first place, made, and its effects tried upon some cats and dogs, which, during the time they were under its influence, were as helpless as if they were totally blind, falling down when the slightest obstacle came in their way. A trial of its effect was afterwards made on the human eye in several cases, and its action in dilating the pupil was found to be very powerful and rapid. The active principle seems to be almost identical with atropine, both as regards its action and its strength, and it is used in Sydney and Brisbane in place of that alkaloid. A good deal of attention has been given in this country to the new agent by Dr. Ringer and Mr. Tweedy. The former says that it has the power of drying the mouth or preventing the flow of saliva, and that it also produces headache and drowsiness, while the latter considers it quicker and more energetic in its action than atropine, and considerably more so than the strongest extract of belladonna. In every case in which it had been used by him he found its action entirely satisfactory. This subject, which is one of importance, inasmuch as it promises to open up a new

source of supply of a substance fully as efficacious as, or perhaps more so than, atropine or belladonna, has for some time past attracted much attention in the colony where the plant grows, and has quite recently been brought to the notice of the Pharmaceutical Society. It is perhaps worth noting, that one of the colonial names of *Duboisia myoporoides* is the cork wood tree, so named from its light brown corky bark. The wood is of a light yellow colour, even grained, but soft, and used in the colony for carving. Specimens of the wood are contained in the Kew Museum.

THE additions to the Zoological Society's Gardens during the past week include an Arabian Baboon (*Cynocephalus hamadryas*) from Arabia, presented by Dr. A. P. Woodforde; two Chacma Baboons (*Cynocephalus porcarius*) from South Africa, presented by Capt. W. L. Coke; a Green Monkey (*Cercopithecus callitrichus*) from West Africa, presented by Mr. Milward; a Great Kangaroo (*Macropus giganteus*), a Laughing Kingfisher (*Dacelo gigantea*) from Australia, presented by Lieut. Crawford Caffin, R.N.; a Short-eared Owl (*Otus brachyotus*), European, presented by Mr. W. K. Stanley; a Golden-winged Parrakeet (*Protophytes chrysoptera*) from the Amazons, received in exchange; a South American Rat Snake (*Spilotes variabilis*) from South America, deposited; a Yellow-footed Rock Kangaroo (*Petrogale xanthopus*), born in the Gardens.

#### THE DETERIORATION OF OIL PAINTINGS<sup>1</sup>

OIL paintings are subject to various kinds of changes, which may be considered as diseases, requiring different treatment according to their different nature. A science needs to be formed, a pathology and therapeutics of oil paintings. The pathology would have to describe and explain those diseases and their progress, and to develop the methods by which a correct diagnosis could be arrived at in each individual case. The therapeutics would teach the remedies which might be applied either to cure or to alleviate the disease, or at least to stop its progress. A hygiene would follow, which would have to teach how to avoid pernicious influences, and which, besides, while giving precepts for the technical process of painting, would have to forestall those constitutional diseases which, even in cases where no noxious influences can be traced, are the causes of decay, after a comparatively short period of existence. As medical science is above all things based on anatomy and physiology, so the exact knowledge of the structure of a picture would have to be acquired previously to any study of its disease. Unfortunately, direct investigation alone can procure no such exact knowledge; on the contrary, we are obliged to enter upon a minute historical investigation of the material as well as of the technical methods adopted by artists of different schools and different periods.

The excellent works of Cennino Cennini, Mérimée, Sir Charles Eastlake, Mrs. Merrifield, and others, have already furnished most valuable material; but still the field for investigation remains unlimited; for, in order to enable us to secure the conservation of each valuable painting, we ought to know exactly how it was made. The artists of the present time would spare infinite trouble to the investigators of future times, if, along with their works, they would leave the account of their practice in the case of each picture. A treatment without exact knowledge of the normal condition, as well as of the nature of the disease, is, as we shall see, as dangerous for the picture as it would be in the case of living beings.

Professional restorers of pictures admit this danger in a general way; each of them, however, is convinced that he himself, by his personal knowledge, skill, and care, knows how to avoid it. The public pays too little attention to the subject, and therefore it occurred to me that it might be useful to give a short account of what we know about this question, of the changes to which oil paintings are exposed, as well as of the means either to avoid or to cure them.

We have to consider, first, the material on which the artist has painted, that is, as far as oil painting is concerned, principally wood and canvas.

Secondly, the priming, that is, the substance with which the surface was prepared in order to be made fit for painting.

Thirdly, the painting itself, that is, the pigments and vehicles used for it, and the liquids that were added during the painting, the mediums, meguilp, siccative, varnish, essential oils, &c.

Fourthly, the coat or coats of varnish spread over the picture. The wood on which a picture has been painted may either warp, or get chinks in it, or become worm-eaten, or even altogether rotten. Against warping, the remedy usually applied is moisture. If the panel is very thick, it is first made somewhat thinner; then the back is moistened, and the picture is left to lie on its back for twelve to twenty-four hours, after which time it will be found to have bent straight. Of course this must not be continued longer than necessary, otherwise the convex surface, instead of becoming plane, would become concave. When straight, the picture is kept so by beads which have to be adapted in a particular way, a certain degree of shifting being allowed for the expansion and contraction of the wood.

Cracks in the wood are drawn together by inserting pieces of wood of a special shape.

Sublimate solutions are employed to destroy worms.

Trifling losses of substance are replaced by cement. Small portions of rotten wood, not extending too near the painting, are cut out and replaced by wedge-shaped pieces. If, however, the greater part, or the whole substance of the panel, is rotten, the picture must be separated from it and transferred to new wood, or rather to canvas.

This was first tried by Hacquin in Paris, and was performed successfully upon many pictures, and, among others, upon one of Raphael's Madonnas, in the Gallery du Louvre, and upon Sebastian del Piombo's "Resurrection of Lazarus," now in the National Gallery. The process no longer appears so very marvellous; it is generally executed in the following way:—

First of all, the surface of the picture is pasted over with gauze and paper. After that the wood is made straight by moistening, or, if necessary, by making incisions with the saw, into which cuneiform pieces of wood are driven. By means of a tenon-saw the panel is to be sawn into little squares, which must be removed by a chisel, and in this way the thickness of the wood is reduced to half an inch; it is then planed until it becomes no thicker than paper, and the rest is removed by means of a knife and with the fingers. The painting being thus severed from its basis, it can be fixed on canvas, if the priming is sufficiently preserved. In the opposite case, a mixture made of chalk and glue, or something of the kind, must be put on first, and very evenly smoothed, after being dry. This done, the new canvas has to be fixed upon it by means of a mixture of glue, varnish, and turpentine, and the substance of the picture pressed tightly and evenly against it by means of warm irons.

In order to avoid deterioration, the most minute precepts have been given for preparing the panel. It has to be taken from the best oak, or nut-trees, or cedars. The wood is to be cut into boards during winter-time, and kept till autumn before being dried; it can then be prepared only in the following spring, &c. It would certainly be preferable to give up wood panels altogether for large pictures, and only to think of means to make the canvas stronger. For small pictures, panels offer certain advantages, and can be more easily preserved from decay.

\* In the canvas we meet with the results of injuries or spontaneous decay. A rent may be mended by rags of linen stuck at the back of the picture. Even a hole may be filled up by pieces taken from other decayed paintings. If the picture is considerably damaged, it will be best to line it. But if the whole canvas is rotten and tattered, it will be preferable to sacrifice it by pulling off the threads one by one, after having secured the painting itself by pasting paper on the front of it. This done, the painting is transferred to another canvas in the same way as those removed from wood.

There are different modes of priming, which may be brought under two principal heads: the distemper and the oil priming.

1. The canvas is distempered by a mixture of chalk or plaster and paste, or glue, which may be laid on raw, unbleached canvas, or this latter may be beforehand prepared with glue or paste. Several coats of this mixture must be put on in succession, one being perfectly dry before the next can be applied. Many of the older oil paintings are painted on such ground. It has the advantage of being quicker prepared, of absorbing the excess of oil, of permitting the colour to enter into the

<sup>1</sup> Paper read at the Royal Institution, Friday, March 1, by R. Liebreich M.D., M.R.C.S., M.R.I.